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EXAMINER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte KENDRA M. GIZA, MARK A. BARGER, RICHARD T. FOX,
SUZANNE M. GUERRA, and BRIAN W. WALTHER

Appeal 2017-000442
Application 14/427,215
Technology Center 1700

Before CHUNG K. PAK, PETER F. KRATZ, and AVELYN M. ROSS,
Administrative Patent Judges.

KRATZ, *Administrative Patent Judge.*

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1–11. We have jurisdiction pursuant to 35 U.S.C. § 6.

Appellants' claimed invention is directed to a styrenic polymer foam and a process of preparing the foam.

Claim 1 is illustrative and reproduced below:

1. A styrenic polymer foam comprising a polymer composition that is in a form of a continuous matrix defining multiple cells therein, the polymer composition comprising a first polymer and a second polymer, the first polymer being a maleic anhydride grafted high density polyethylene and the second polymer being a styrenic polymer resin that is free of grafted maleic anhydride, wherein the first polymer contains on average 0.05 or

more weight-parts grafted maleic anhydride based on total weight of the first polymer and wherein the concentration of first polymer in the polymer composition is sufficient to provide at least six weight-parts of grafted maleic anhydride per million weight parts of the polymer composition.

The Examiner relies on the following prior art references as evidence in rejecting the appealed claims:

Sano	US 4,433,073	Feb. 21, 1984
Tabor	US 4,684,576	Aug. 4, 1987
Patel	US 2007/0299152 A1	Dec. 27, 2007
Zucchelli	WO 2012/168746 A1	Dec. 13, 2012

The Examiner maintains the following grounds of rejection:

Claims 1–10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Zucchelli (Italmach Chemical) in view of Sano or Taber. Claim 11 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Zucchelli in view of Sano or Taber, and Patel.

After review of the opposing positions articulated by Appellants and the Examiner and the evidence of obviousness adduced by the Examiner and the countervailing evidence marshalled by Appellants, we determine that the Appellants' arguments and evidence are insufficient to show reversible error in the Examiner's obviousness rejections. *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011).

Accordingly, we affirm the stated obviousness rejections for substantially the findings of fact and the reasons set forth by the Examiner in the Examiner's Answer, the Final Office Action, and the Non-final Office Action (December 24, 2015). We offer the following for emphasis.

Concerning the Examiner's rejection of claims 1–10 under 35 U.S.C. § 103(a) as being unpatentable over Zucchelli in view of Sano or Taber, Appellants argue the rejected claims together as a group. Accordingly, we select claim 1 as the representative claim on which we decide this appeal as to this ground of rejection.

Appellants argue that: (1) Sano and Taber represent non-analogous art, (2) the Examiner's rejection is premised on impermissible hindsight and a purported lack of sufficient motivation for one of ordinary skill in the art to select a polymer corresponding to the polymer comprising maleic anhydride grafted high density polyethylene (MAH-g-HDPE) of representative claim 1 as a constituent of the styrene-containing foam of Zucchelli in a manner to suggest a polymeric foam formulation satisfying all the limitations of representative claim 1 based on the applied prior art teachings, and (3) Appellants present evidence that is contended to show surprising results for the claimed foam formulation, which evidence is argued to be commensurate in scope with the claimed subject matter and of such character as to outweigh the proffered evidence of obviousness applied by the Examiner (App. Br. 7–14; Reply Br. 2–6).

Contrary to Appellants' argument, Appellants' contentions do not establish that Sano and/or Taber represents non-pertinent prior art (Ans. 3).

The two separate tests for determining whether a prior art reference is analogous are as follows: (1) whether the art is from the same field of endeavor, regardless of the problem addressed; and (2) if the reference is not within the inventor's endeavor, whether the reference is reasonably pertinent to the particular problem with which the inventor is involved. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004).

Here, the Examiner is relying on Sano and Taber to evince the existence of maleic anhydride grafted high density polyethylene polymers as an available material within the scope of the polyethylene grafted with maleic anhydride that is described by Zucchelli as being useful for increasing cell size of the polystyrene- containing foam of Zucchelli (Ans. 3–4; Non-final Office Act. 3–4; Zucchelli, p. 10, ll. 15–30). Appellants have not persuasively articulated why Sano and Taber are not pertinent references to one of ordinary skill in the art to evidence a known available type of maleic anhydride grafted polyethylene.

As our reviewing court has indicated, labeling a reference as analogous art “merely connotes that it is relevant to a consideration of obviousness under § 103 as ‘prior art.’” *In re Sovish*, 769 F.2d 738, 742 (Fed. Cir. 1985). Contrariwise, considering a reference as non-analogous art is a determination that removes it as prior art to be considered; that is, it is construed as being non-relevant evidence for consideration of the obviousness question mandated by statute.

Thus, Appellants’ arguments fail to establish that Sano and Taber are non-relevant evidence for establishing that high density polyethylene grafted with maleic anhydride is a known type of maleic anhydride grafted polyethylene that is available to one of ordinary skill in the art.

Nor have Appellants established that Zucchelli would have excluded MAH-g-HDPE as a known and workable choice for the maleic anhydride grafted polyethylene taught to be useful as a cell size increasing agent for the styrene foam of Zucchelli (p. 10, ll. 15–26). In this regard, Appellants have not shown that one of ordinary skill in the art would have failed to recognize high density polyethylene as one of a few available sources of polyethylene,

categorized by density, which high density polyethylene is known to be available grafted with maleic anhydride as determined by the Examiner (Ans. 3). As such, we concur with the Examiner that it would have been prima facie obvious for one of ordinary skill in the art to select high density polyethylene grafted with maleic anhydride as the maleic anhydride grafted polyethylene taught by Zucchelli as a cell size enlarging polar polymer based on the applied references' teachings (Ans. 3–6).

Moreover, Appellants have not persuasively articulated why one of ordinary skill in the art would not have been led to employ a workable amount of maleic anhydride grafting of the polyethylene, including grafting amounts within the claimed range of 0.05 or more parts by weight of grafted maleic anhydride based on the weight of the polymer to be grafted and such that at least six parts by weight of grafted polymer per million parts by weight of polymer composition is employed in the styrene-containing polymer based on the teachings/suggestions of Zucchelli to add such cell size increasing polar polymer materials in amounts for increasing cell size for reasons as set forth by the Examiner (Ans. 6–8; Non-final Act. 3–4). After all, one of ordinary skill in the art has some skill and would have readily recognized that selecting workable/ amounts of the grafted polymer for increasing cell size would have reasonably led to selecting amounts of the grafted polymer that overlap or fall within with the claimed ranges. As pointed out by the Examiner, representative claim 1 provides for a relatively low minimum amount of the grafted polymer and one of ordinary skill in the art would have arrived at employing workable amounts of grafted polymer meeting the low minimum amount required by representative claim 1 (Ans. 7).

Consequently, Appellants' assertions as to the Examiner's obviousness position lacking the requisite motivation and being grounded on impermissible hindsight is not substantiated by the record before us and, consequently, the argument lacks merit.

As for Appellants' proffered evidence of unexpected results, it is well settled that it is Appellants' burden of production to present evidence that establishes that the reported tests results for the claimed subject matter are unexpected, that the comparisons are with the closest prior art, and that the showing is commensurate in scope with the claimed subject matter. *See In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972).

Here, Appellants have not established that the evidence supplied in the Declaration under 37 C.F.R. § 1.132 by Dr. Richard Fox, a named co-inventor, and in the subject Specification presents data that is of a sufficient quantity and character to meet the above-noted production standard of furnishing evidence showing test results for the claimed invention that are truly unexpected and that is reasonably co-extensive in scope with representative claim 1 when compared with results for the closest prior art, as determined by the Examiner (Final Office Action 6–7; Ans. 6–11).

In this regard, the relied upon test results from the Declaration under 37 C.F.R. § 1.132 by Dr. Fox shows that an example utilizing an amount of MAH-g-HDPE within the scope of representative claim 1 (Ex. 2(ii)) furnishes a cell size that is reported to be the same as a new comparative Example utilizing the same amount (1.25 parts by weight) of low density polyethylene grafted with maleic anhydride (MAH-G-LDPE) (Fox Decl., p. 3, Table 3(a)). Appellants' argument that test results for five other examples within the scope of claim 1 in the Declaration of Dr. Fox show that the

grafted HDPE yielded slightly larger cell sizes (6-22% larger) than a similarly grafted LDPE does not militate against the fact that Appellants have not shouldered their burden to establish unexpected results commensurate in scope with representative claim 1 as evinced by Example 2(ii) of the Declaration. Appellants have not presented any logical reasoning or evidence explaining why the latter example should be considered as a sport (compromised example) and excluded from consideration (App. Br. 13). Nor have Appellants adequately explained how an increase in cell size ranging from zero to 22 percent over the six Declaration examples evinces differences in cell size that are truly unexpected.¹

Moreover, Appellants have not otherwise articulated how the six examples presented in the subject Specification together with the six examples presented in the Declaration are adequate to show unexpected results commensurate in scope with the breadth of representative claim 1 given that claim 1 is not limited to the particular foam formulations tested and is open to the inclusion of a variety of other components, including other polymers, by use of the open “comprising” transitional term.

¹ We recognize that the Examiner emphasized the comparison examples in the subject Specification, as if the other comparisons employed in the Declaration of Dr. Fox were not supplied (Ans. 10). However, we consider this error to be harmless as it is clear that the Examiner considered the Declaration of Dr. Fox by discussing the same cell enlargement obtained for one of its examples (Final Act. 6). Moreover, the Examiner correctly determined that the evidence furnished was insufficient to be commensurate in scope with the claims and to establish an improvement of results associated with the claimed subject matter that is adequate to refute the inference of prima facie obviousness presented by the evidence supplied by the Examiner (Ans. 10-11; Final Act. 6-7).

Based on the totality of the record, including due consideration of Appellants' evidence and arguments, we determine that the preponderance of evidence weighs most heavily in favor of an obviousness determination as to the claimed subject matter. Thus, upon consideration of the arguments and evidence of record, we determine that the Examiner has reasonably established that representative claim 1 is rendered obvious over the applied prior art based on the evidence of record.

Accordingly, we affirm the first stated obviousness rejection.

Appellants rely on their arguments and evidence set forth for the base rejection, as discussed above, for traversing the Examiner's separate obviousness rejection of dependent claims 11. Additionally, Appellants contend that dependent claim 11 is limited to the use of a carbon dioxide concentration range as a blowing agent ("less than 4.5 weight-parts per hundred weight parts of polymer composition") that excludes Example 2(ii) of the subject Specification, wherein 4.5 parts by weight of carbon dioxide per hundred weight parts of polymer composition was employed as blowing agent (App. Br. 11–12; Spec. 9, Table 3).

However, Appellants have not established that a significantly different cell size enlargement would result from employing an amount of carbon dioxide that is slightly less than 4.5 parts by weight of carbon dioxide per hundred weight parts of polymer composition as embraced by claim 11, say 4.49 parts by weight of carbon dioxide per hundred weight parts of polymer composition employed as blowing agent, as compared to the results shown in Table 3(a) of the Fox Declaration for both MAH-g-HDPE and MAH-G-LDPE where 4.5 parts by weight of carbon dioxide per hundred weight parts of polymer composition was employed.

It follows that we shall sustain the separate obviousness rejection of dependent claim 11 for substantially the reasons discussed above with respect to the Examiner's rejection of claim 1.

CONCLUSION/ORDER

The Examiner's decision to reject claims the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED